and trading information about the VideoCipher system, the countermeasures GI is employing and possible adjustments its members can make. The more information that is available about the security and operating features of a system, the less secure that system will be. The use restrictions in the software licenses are required to insure as high a degree of system security as possible. It is also acknowledged that such software programs constitute valuable, confidential and proprietary information and trade secrets of GI. It would be a violation of the control computer software licenses to use such software to insert another manufacturer's authorization data stream at a programmer's uplink site.

3. Duplicating an Authorization Facility

The desirability of requiring a firm to share a facility such as the DBS Center has been much debated in the economic literature, mostly in connection with antitrust cases where a competitor seeks access to a monopoly facility. In general, the requirement of access has been supported by economists only where a firm owns a "natural monopoly" or where it is clear that a franchising authority has granted monopoly rights.[31] It is clear that the latter situation does not apply with respect to the DBS Center since GI received no monopoly franchise from a governmental authority. The DBS Center also lacks the key attribute of a "natural monopoly" -- declining costs over the entire range of output.[32] While it is true

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[31] See, e.g. Werden, The Law and Economics of the Essential Facility Doctrine, 23 St. Louis Univ. L.J. 433, 476 (1987).

[32] See, II Kahn, The Economics of Regulation, p. 119 (1988 ed.).

that the operation of the DBS Center results in economies of scale, there is no evidence that such economies increase over the entire range of output.

A corollary of the "natural monopoly" test, and one which has concerned most of the economic literature and the cases, is whether the "monopoly" facility can be duplicated. If it can be duplicated in a physical sense, virtually all cases would not require forced access even where duplication would entail significant cost to the new entrant.[33] In this regard, information about the relatively small costs of producing another authorization center is relevant.

As the Commission has noted, there are other existing and planned satellite services. We note, in a discussion pertinent also to the larger questions raised by the NOI about the future directions of these markets, that the DBS Center is not unique. Several facilities that address remote descramblers[34] are already in existence or are planned. At this time, PrimeStar Partners, the consortium using a Ku-Band satellite to deliver programming to consumers, offers encryption using a Scientific-Atlanta system and authorizes descramblers to receive this programming

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[33] For the general rule, see MCI Communications v. AT&T, 708 F.2d 1081, 1132 (7th Cir. 1983); see also Twin Labs v. Weider Health & Fitness, 900 F.2d 566, 570 (2d Cir. 1990); Florida Fuels, Inc. v. Belcher Oil Co., 717 F. Supp. 1528 (S.D. Fla. 1989); Florida Cities v. Florida Power & Light, 525 F. Supp. 1000, 1007 (S.D. Fla. 1981); Flip Side Prods. v. Jam Prods., 843 F. 2d 1024, 1033-34 (7th Cir. 1988).

[34] We speak here of only addressability as it applies to the consumer satellite market. Methods of managing addressability in all video delivery and transmission markets are legion.

through a separate facility. DirecTV, the Hughes-led consortium proposing to offer high-powered Ku-Band DBS, will also provide authorization for its customers through its own authorization facility using a technology reportedly being developed by Thomson of France and News Datacom. SkyPix, which proposes to use video compression technology to offer a wide range of programming and pay-per-view movies would also establish its own authorization capability.[35]

The costs of building and operating an alternative authorization center can be relatively modest. At the Commission's request, we offer the following information concerning the costs of establishing an authorization center which is based upon the following assumptions:

a. The authorization center will have a modular design permitting capacity to grow as required by an increasing subscriber base;

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[35] It has been reported in the trade press that SkyPix's financial condition has made the launch of its service uncertain. However, recent reports suggest that additional financing may be available to continue SkyPix's business plans.

The Notice also mentions Leitch and DECTEC encryption. Leitch security systems have limited and confined network applications. The Commission correctly states in the NOI that legal proceedings brought by GI are pending against Dectec regarding its descrambler product. The Federal Court of Canada issued a preliminary injunction against Dectec and its principals in January, 1991, which remains in place today. We object to the reference to Dectec in the NOI as a member of our industry and deplore any credibility which Dectec might try to derive by implication from such reference.

See also the discussion, infra, p. 37, on recent announcements on adoption of compression technologies.

b. Costs attributable to software development and licensing are excluded from this estimate;[36] and

c. Facility expense and operating personnel expenses are not a part of this estimate due to geographic and labor cost variability. We do note that initially an authorization center could be established in a small space with modest leasehold improvements.

Based upon the preceding assumptions, we estimate the cost for a new entrant of establishing an authorization center including acquisition of computers, assorted cables, personal computers, monitoring and other equipment would range from $500,000 to $2 million, depending upon system design and center architecture.

Costs of the magnitude outlined here constitute no impediment to Titan supplying descrambling technology. If a vendor is unwilling to make the financial commitment necessary to establish an authorization center, we believe that should raise serious questions about the vendor's commitment to maintain security, service equipment, and a whole host of other elements necessary to providing secure encryption in the HSD market.

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[36] Some may object that excluding this factor understates the total costs of establishing a center. That is correct. However, we note that Titan has publicly stated in the December 1992 issue of Satellite Retailer that the original DBS Center software is owned by Titan Corp. Without commenting on the veracity of that statement, if Titan owns the necessary software already, the assessment here is accurate as to Titan and an appropriate measure.

Duplicate authorization centers have benefits. Indeed, some commentators have expressed concern that requiring sharing of facilities might eliminate the incentive to develop competing alternatives.[37] In short, from a competitive perspective, the operation of multiple centers would be preferable to shared access.

4. Practical Problems of Access

Finally, even if access to the DBS Center were technologically feasible without jeopardizing security, the terms of access would necessarily pose a host of practical problems. Surely, Titan, or any other potential competitor, should not be allowed to benefit from GI's technology and investment without appropriate consideration. Such a policy would dissuade companies from committing the resources necessary for research and development. It would have the effect of discouraging the private sector from developing competitive technologies. And it would also make security responses more difficult, with the possible result that copyright owners would divert their programming to other, more easily secured, means of transmission, such as fiber optic networks, thus terminating service to important segments of consumers. Moreover, the terms and conditions of access would have to be established. That task would be substantial.[38]

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[37] See, e.g., Blumenthal, Three Vexing Issues Under the Essential Facilities Doctrine: ATM Networks As Illustration, 58 Antitrust L.J. 855, 868 and fn. 42 (1990).

[38] The difficulty of setting such terms and conditions has led one prominent commentator to suggest that the sharing of facilities be limited to those situations

IV. OTHER TECHNOLOGICAL ISSUES[39]

A. Digital Technologies

The Notice invites commentors to peer into the future, of not only satellite television but also other types of video delivery systems. This effort is ambitious and is constrained by certain limitations, chief among them that it asks us to look at markets that are rapidly evolving. These markets are being changed by some of the world's most dynamic technological developments. Under these circumstances, much of what the Commission will receive will, at best, be a "snap shot" of some of the current developments in technologies and products.

Also, many of the issues about which the NOI seeks information are currently the subject of negotiations between users and vendors. GI is a party to some of these negotiations and this places some limits on our ability to provide information, except in general terms. Nevertheless, some of our views of the shape of the future can be discussed and some information is already available that will be useful to the Commission.

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where an established regulatory agency is willing to commit the resources to constant monitoring of the price and other terms of access to the facility. See Areeda, Essential Facilities: An Epithet in Need of Limiting Principles, 58 Antitrust L. J. 841, 852 (1990).

[39] NOI, Sec. V, p. 10.

B. Evolution of Digital Video

In 1988, GI began earnest development of digital television systems based on digital video compression technology. The impetus for this effort was GI's recognition that the analog HDTV systems under development in Japan (the MUSE system) and Europe (HD-MAC) were very unfriendly to North American cable headend reception sites and HSD consumers since the analog HDTV systems' large required bandwidths would mean high carrier-to-noise ("C/N") thresholds and much larger receive dish sizes. Since these markets constituted significant businesses for GI, the apparent advent of analog HDTV was of great concern, particularly since most North American programming is on C-Band satellites which already require relatively large dishes for receiving analog NTSC signals. GI believed that increasing the dish size requirements even further to receive analog HDTV signals would be unacceptable for the North American cable and HSD users. GI determined that not only was digital HDTV feasible but that it was the only approach for the North American market, including the North American broadcast market. Moreover, it was a way for the U.S. to leapfrog the Japanese and European analog HDTV efforts with a more advanced technology.

Also in the late 1980's, GI realized that the same basic technologies of digital video compression and digital transmission (combined with conditional access) could be applied to standard (NTSC) television signals, allowing much more efficient use of bandwidth, better video quality, and better video security. Thus, GI launched two major efforts based on the core DigiCipher™ technology:

DigiCipher HDTV and DigiCipher multi-channel NTSC. For these pioneering efforts, GI is widely credited with launching the digital television revolution. GI has also undertaken development of a multi-channel DigiCipher PAL/SECAM system for 625 line countries.

In June 1990, GI submitted its HDTV version of DigiCipher to the FCC for consideration as the U.S. terrestrial broadcast standard. This monumental announcement subsequently caused the Zenith/AT&T alliance and the Advanced Television Research Consortium (ATRC), led by the European electronics companies, Thomson and Philips, to switch to all-digital HDTV systems. Subsequently, GI formed an alliance (the American TeleVision Alliance or "ATVA") with the Massachusetts Institute of Technology. The ATVA has submitted and successfully completed testing of two HDTV systems.

The advent of digital television has thrown the European and Japanese government/industrial policies and associated HDTV strategies into a state of disarray. In an irreconcilable contradiction, Thomson and Philips are still advocating their analog HD-MAC technology in Europe, while claiming their digital HDTV system is the best solution for the U.S.

In July of 1992, GI began a comprehensive field test of its DigiCipher multi-channel NTSC satellite transmission system in conjunction with Home Box Office (HBO). GI is the first (and still only) multiple-channel per carrier television

compression system commercially available in the world. The DigiCipher multi-channel NTSC satellite system allows up to ten NTSC television signals to be digitized, compressed, multiplexed and encrypted for modulation and transmission on a single carrier in a single satellite transponder. The same package of programming can be transmitted in a single 6 MHz cable TV channel using a different modulation technique, providing cable subscribers with the same benefits of more channels, better video quality and better security (GI's DigiCable™ system).

Several important announcements regarding these technologies have recently been made. In October 1992, GI and American Telephone and Telegraph Company ("AT&T") agreed in principle jointly to develop a multi-channel digital television system for the U.S. cable TV market, combining DigiCipher and AT&T technologies. In November 1992, the Public Broadcasting System (PBS) announced its selection of the DigiCipher system, with a migration path to the GI/AT&T joint compression system, for delivering PBS services and many channels of educational programming to affiliates and schools throughout the U.S. In December, HBO announced it will begin compressed digital television transmission in the U.S. in early 1993 using DigiCipher, with the ability to migrate to the GI/AT&T system. These announcements followed commitments to multi-channel DigiCipher by Rogers Cablesystems of Canada, STAR TV of Hong Kong, Multivision of Mexico, the Middle East Broadcasting Centre, and Action Pay Per View of the United States.

C. The Latest Announcement

In December 1992, Tele-Communications, Inc. ("TCI") announced that it will use the GI/AT&T compression system to begin delivering additional programming to its cable customers in 1994. TCI also announced that its backyard dish customers will receive similar compressed digital services in mid-1993, and that these will be the world's first major applications of compressed digital television technology.

The TCI announcement revealed several significant features that are pertinent here. TCI will establish its own, separate authorization center using GI technology to govern access control to the digital signals that it will distribute via satellite. In addition, GI and AT&T have agreed to license their compression, encryption and access control technologies, immediately to several other manufacturers and, upon the completion of certain stated goals, more broadly.

Finally, GI and AT&T have been working to submit the GI/AT&T joint compression technology into the process begun by the Moving Picture Experts Group (MPEG), which has initiated an international standardization process for a digital video and audio coding technique. One of the motivations for doing so is to ensure that U.S. compression technology will have maximum possible compatibility with standards that might develop in Europe and elsewhere. Our goal is to have this joint compression technology recognized as an entertainment subset of the

planned MPEG-2 compression standard, which has heretofore been developed primarily for digital storage media rather than television transmission applications.

GI is mindful, however, of the limitations of the MPEG process. Without burdening these comments with a lengthy discussion of MPEG, the necessity for an entertainment subset is created by the complexity of the MPEG-1 standard, which is the foundation for MPEG-2, and which preceded recognition that digital video was viable and suitable for television (NTSC or HDTV). This complexity, while probably manageable for computer applications, adds unnecessary costs to consumer electronics and television related products and carries no corresponding value.

Moreover, matters of crucial concern to television transmission (modem, forward error correction, adaptive equalization, encryption/conditional access) are not addressed by the MPEG process. This may reflect the fact that U.S. broadcasting interests have not been directly involved in the MPEG process, with the notable exceptions of CableLabs and Hughes.

Finally, GI remains sensitive to the need for U.S. companies to work with the MPEG process without ceding core technologies in digital TV/HDTV to foreign electronics companies. We think the Commission and other agencies of the U.S. Government should be similarly concerned.

D. The Standard Decoder Interface

The Commission has responded to the speculation on the part of some about the utility of a standard decoder interface. While it is theoretically possible to develop a standard interface, it is not always as easy as theoreticians expect and is not always as readily accepted as its proponents hope. In this regard, the shortcomings of the multiport interface, propounded by EIA and the cable television industry, have proved fatal to its widespread adoption.

Such a standard interface, of course, already exists between home satellite receivers and descramblers based on VideoCipher technology and was developed through licensing agreements with receiver manufacturers. Where future issues will focus is with respect to interface as it applies to smart card technology, which is still in the developmental stage. We also believe that a universal interface will be more effective and maintain a higher degree of system security in a localized cable television system compared to a national broadcast system such as HSD and DBS will be.

In any event, we do not believe that a government mandated standard is desirable or required. The HSD market has, over its relatively brief life span, demonstrated an ability to develop standards which insure consumer access to a wide selection of programming. As new technologies are introduced, and as they are applied to even wider markets (more satellite consumers; CATV consumers)

different solutions may be appropriate. We believe solutions have historically and will continue to be achieved without government intervention.

E. General Comments

Digital transmission of video offers so many advantages over analog transmission that it is definitely the technology of the future. GI's pioneering work in this area first received wide attention in the context of the FCC's program to promulgate an ATV standard. For some time, this breakthrough diverted attention from equally important applications of digital technology in satellite and CATV transmission of video.

One of the most important advantages which digital video provides is the advancement of compression technologies. The application of video compression to current NTSC television signals allows a staggering increase in transmission capacity. It comes on the heels of another increase in broadband capability with the deployment of fiber-optic cable. Quantum leaps in computing power and miniaturization coupled with these advances create a leap beyond broadband to "megaband" transmission. The economic and social implications of this digital compression revolution are as yet only partially appreciated.

Despite the advantages of digital transmission, we believe that it will replace analog transmission gradually, not precipitously. With respect to advanced television and the broadcast environment, the timing of complete replacement of

analog with digital lies primarily in the hands of the Commission and will depend largely on its policies. Cable television operators, who foresee utilizing digital transmission to increase their product offerings, are considering adding a layer of digitally transmitted programming on systems that will continue to utilize analog transmission. For some period of time, cable satellite programmers are expected to deliver analog signals to the HSD market, utilizing the C-Band satellites for which they have contracted.

Digital technologies will be introduced with continued attention to backward compatibility with existing systems. The cost of the installed base of existing systems and the value given to existing customers (subscribers) are powerful safeguards against radical change. Providers can be expected to migrate consumers to more advanced technologies, where and when it makes business sense. Within the advanced television context, there is much discussion about the manufacture of ATV receivers capable of displaying NTSC signals. With the introduction of DigiCipher digital compression and transmission technology, GI plans to produce home satellite receivers capable of utilizing both analog and digital signals.[40] GI believes that similar capability will be required for cable television

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[40] The Notice states that the VCII system is not digital compatible and that DigiCipher is not compatible with the VCII. NOI, ¶ 23 and fn. 27, p. 11. The relevant question is actually compatibility with VCRS technology. Also, in raising the issue of ATV, the NOI observation deals with three, not two, systems because DigiCipher NTSC and DigiCipher HD, while based on the same technologies, are in fact separate products. Nevertheless, the NOI's observation is accurate. These systems are not inherently compatible; VCRS is analog and DigiCipher is digital. However, compatibility can be achieved through equipment design and, where this

converters as its technology for digital transmission and compression, DigiCable, is introduced in the CATV industry.

Backward compatibility may not be a feature of all systems proposing to enter video transmission markets. While we are not privy to the details of the Hughes/Hubbard DirecTV program, we understand that this DBS system will utilize only digital signals. These signals will be available only through digital receivers which may or may not have analog capability or the ability to receive programming other than that offered by DirecTV.

This is the type of development that raises the issue of whether consumers might be faced with multiple, incompatible satellite and other video technologies.[41] No doubt this proceeding will generate comment to the effect that this will work hardship on consumers. GI's own experience has been that every advance in its satellite encryption systems have been accompanied by hand-wringing and cries of subscriber disenfranchisement.[42] That has not occurred.

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makes business sense, such design can be anticipated. Moreover, to the extent that there are similarities among systems, they would be reflected in less complex and less expensive equipment solutions. In this respect, the similarities between DigiCipher NTSC and DigiCipher ATV are greater than that between either of those two systems and the VCRS. Nevertheless, we foresee dual VCRS and digital capable receivers, in much the same way that the market has already provided C-band and K-band capable receivers.

[41] NOI, ¶ 25. p. 12.

[42] Without belittling legitimate concerns, we note that a considerable portion of those dire predictions were coming from the satellite pirate community.

Nevertheless, the most common proposed solution to all perceived problems presented by multiple systems is to impose product standardization by freezing the technology.[43]

We do not adhere to the view that multiple systems are inherently bad. They can increase competition. They can provide a foundation upon which new developments in technology (encryption or other technologies) can occur. They can provide programmers with incentives to develop new programming products. They can localize problems, such as those that might occur with a security breach in a particular encryption system.

We expect that the Commission will hear from those who advocate that consumers should have universal access to all video distribution systems. But achieving such universal access can carry with it significant costs and significant security risks. For one thing, it means standardization across a wide range of equipment. This may have some benefit in cost reduction, but it raises all of the problems presented by standards, including hindering development and enhancements to products. Encryption technology presents particular problems for

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[43] The Notice states that this inquiry does not seek to reopen the issue of mandatory encryption standards. NOI, ¶ 2, p. 2.

standardization, as it is constantly under attack and has a constant need for enhancements.[44]

Another problem raised by universal access is that the costs for particular features must be adopted and paid for by all subscribers, even by those who do not want them or will not benefit from them. For example, requiring that all television receivers be digital-compatible would force even those who will not utilize that technology to pay for it.

We believe that we are only now at the earliest stages of debate about these types of issues, primarily because we are still at the earliest stages of introducing new technologies, new products and new services. We believe that government action, in the form of standards or other types of market intervention, are unwarranted in the absence of compelling evidence that the markets will not satisfactorily address issues of compatibility and appropriate consumer access to video products. Any intervention would be premature at this nascent phase of the new developments. While we can anticipate change, no one can predict with certainty the precise form it will take.

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[44] As the HSD industry moved from the *de facto* standard of the VCII to the VCII Plus, the process was more efficient and certainly faster than it would have been had a formal standard, whether mandated by government or not, been in place.

V. CONCLUSION

GI believes that the competitive market has served this industry well and will continue to do so. Mandated compatibility through forced sharing of technology and the adoption of an arbitrary standard interface are both unnecessary and potentially stifling of innovation. That is our general conclusion and it certainly provides no support for the proposition that Titan should be enabled to achieve commercial goals by regulatory action which would not have been realized based on the merits of its product offerings.

Respectfully submitted,

Quincy Rodgers
Associate General Counsel and
Director, Government Affairs
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Of Counsel:

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December 24, 1992

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GENERAL INSTRUMENT

VideoCipher Division
General Instrument Corporation
6262 Lusk Boulevard
San Diego, CA 92121
619/455-1500
FAX 619/535-2486

5 March 1991

D. Marshall Nelson, Esq.
Senior Vice President
The Titan Corporation
5910 Pacific Center Blvd.
San Diego, California 92121

Dear Marshall:

It has come to our attention that in the recent past representatives of your company have initiated discussions with certain licensees and customers of VideoCipher products indicating that Titan Linkabit Corporation ("Titan") would soon be in a position to offer such products for sale. Such discussions are neither accurate nor appropriate.

Titan should not be discussing the prospect of doing business with VideoCipher customers at this time because the non-competition agreement contained in the contract of sale between General Instrument Corporation ("GI") and M/A-Com, Inc. dated as of July 4, 1986 as amended, prohibits M/A-Com and its subsidiaries from engaging in competitive activity, as therein defined, for a period of five years. Such five year period will not expire until September 19, 1991. The provisions of the non-competition agreement clearly cover your attempts to condition the market and our customers for your proposed entry.

The discussions are inaccurate because Titan is neither the owner nor the licensee of intellectual property rights necessary for Titan to make, use or sell current VideoCipher products or to license others to do so. VideoCipher products have evolved significantly since the acquisition by GI of the Cable/Home Business. Consistent with past practice, patent, copyright and maskwork protection has been sought and obtained with respect to the technology developments embodied in the products. Neither M/A-Com nor Titan is licensed to practice such new technology which is critically important to such products. In addition, the software, firmware, maskworks, know how and other proprietary rights other than those rights cited immediately above which represent a significant part of the VideoCipher system, are subject to perpetual contractual limitations. A review of the licenses granted by M/A-Com in connection with the sale of Cable/Home Business reveals that such licenses do not permit either M/A-Com or any successor to license such rights.

GENERAL INSTRUMENT

We have been very pleased with our working relationship with Titan and greatly appreciate your cooperation and responsiveness. It is our sincere desire to preserve and nurture this relationship. We cannot however, ignore actions which in any way threaten our core business.

This is not intended to be an exhaustive analysis of our rights or the limitations on those of Titan. We merely wish to bring these matters to your attention in the hope that the statements made by representatives of Titan were made without a working knowledge of such rights and limitations.

I look forward to your assurances that the conduct discussed has been discontinued or will cease immediately. If you would like to discuss any of the issues presented I would, as always, be delighted to speak with you.

Yours truly,

Kenneth S. Boschwitz
General Counsel

TITAN
CORPORATION

January 2, 1992

Mr. Jim Bunker
President
General Instrument, VideoCipher Division
6262 Lusk Boulevard
San Diego, CA 92121

Dear Mr. Bunker:

As you may be aware, Titan has announced the development of a new very secure satellite video scrambling product, TITANCypher III U.S.™ In this regard, Titan intends to establish a joint venture which will desire to become a user of the current DBS Center. Although we do not believe such use would involve any incremental cost to CHCC, Titan is willing to pay a reasonable price for this service should it involve any demonstrable costs to General Instrument. Specifically, as is the case with Channel Master, we need to have the CHCC DBS Center accept Titan's Unit Key list to be placed under a separate Category Key and included in the DBS Center data base so that it will be possible to authorize the units that Titan produces. Accordingly, we would like quotes for your price for:

1) a business system port

2) the installation of a keylist specific to the TITANCypher III U.S.™ consumer descramblers and

3) the use of the VideoCipher II™ DBS authorization data stream.

In order for Titan to maintain its development schedule, we need firm quotes on the above prior to January 10, 1992. We recognize that there may be certain details related to our usage that you or your designated representative may wish to discuss with Titan. If so, please do not hesitate to call and we will set up a suitable meeting.

Sincerely,

David D. Otten
Vice President and General Manager,
Information Systems Division

bcc: L. Bluestein
S. Meyer
M. Nelson
C. Newby
G. Ray

GENERAL INSTRUMENT

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January 28, 1992

RECEIVED
JAN 29 1992
D.D. OTTEN

Mr. David D. Otten
Vice President and
General Manager
Information Systems Division
Titan Corporation
3033 Science Park Road
San Diego, CA 92121

Dear Mr. Otten:

I am writing in response to your January 2, 1992 letter requesting firm quotes for Titan's becoming a user of the DBS Authorization Center in three ways; through access to a business system port, by installing a Titan key list and by use of the VideoCipher® II authorization data stream.

Enclosed is a copy of the standard form of DBS Authorization Center Agreement for Program Distributor furnished to me by James Shelton, Director of the DBS Center. The agreement sets forth charges and other terms and conditions of access to a business port, including eligibility. If Titan satisfies the eligibility and other DBS Center requirements, which Mr. Shelton will be glad to discuss with you, the DBS Center will welcome Titan as a customer.

Unfortunately, we cannot be as hospitable with respect to your second request, installation of Titan's Unit Key list. This is not a service we have offered to Channel Master or any other party, or which we have any present intention of offering.

Finally, I am unable to respond to your request to use the VideoCipher II data stream because it is not at all clear to me what this request means. Any explanation you can provide would be appreciated. My preference, due to my hectic travel schedule, would be that any clarification be in writing. I suspect that the service you request will fall into the same category as the key list request, but will reserve judgment until all the facts are available.

Yours truly,

James F. Bunker

James F. Bunker
President

Enclosure

bcc: L. Bluestein
J. McDougall
S. Heyer
M. Nelson
C. Newby
G. Ray
C. Tyndall
D. Wood

TITAN
CORPORATION

David D. Otten
Vice President and General Manager
Information Systems Division

March 17, 1992

Mr. James F. Bunker
President
General Instrument, VideoCipher Division
6262 Lusk Boulevard
San Diego, CA 92121

Dear Mr. Bunker:

I am in receipt of your letter of January 28, 1992 in which you indicate that you cannot comply with one of Titan's requests and that you require additional information to adequately consider another.

We have reviewed the standard "DBS Authorization Center agreement for program distributor" and are satisfied that Titan meets the eligibility requirements for access to a business port. Please let me know promptly if you disagree.

More importantly, we cannot accept your rejection of Titan's request for:

a. The installation of a unit keylist specific to the TITAN Cypher III U.S.™ consumer descramblers, and

b. Its associated implied use of the VideoCipher II™ DBS authorization data stream.

As you know, under the terms of the sale of the VideoCipher Division to General Instrument by M/A-COM Linkabit, rights to the patents and technology developed for VideoCipher were retained by Linkabit (now a part of Titan) for its own use commencing five years after the sale of the division. That time period expired in September of last year. Therefore, Titan is now free to apply this technology without contractual restriction.

Titan thus plans to build its own VideoCipher compatible units in accordance with the intent of both parties at the time of the aforementioned sale. The description, schematics and circuit diagrams left in the possession of Titan after the completion of the sale were intended to be used for that purpose. We are, of course, redesigning the units to completely solve prior security breaches and to expend its capabilities for subscriber services.

3033 SCIENCE PARK ROAD • SAN DIEGO, CALIFORNIA 92121
PHONE (619) 552-9433 • FAX (619) 552-9645

The eventual use by Titan of the DBS Center in the manner contemplated in my letter to you of January 2, 1992 was contemplated at the time of the sale of this technology by M/A-COM Linkabit to General Instrument. In this regard, page 208 of the "Disclosure Schedule" which was Part 4.1.10 of the Sales Agreement between M/A-COM Linkabit and General Instrument provides as follows:

> '20. DBS Authorization Center. In connection with the creation and operation of the DBS Authorization Center for the scrambling/descrambling system, there may exist antitrust issues related to unequal treatment among users of the center and related to allocation of a scarce resource so as to limit opportunity for access to the Center by new enterprises.'

Titan is such a 'new enterprise' entitled to fair access to the DBS Authorization Center in order to enter this market. As I am sure you understand, it would be extremely impractical if not impossible for Titan to enter this market and offer a competitive alternative to the General Instrument system if it were denied reasonable access to the DBS Center as requested in my letter of January 2.

Titan thus demands that a unit keylist for units which Titan will produce become a part of the keylist of the units whose access to programming is controlled by the DBS Center in the same manner that the Channel Master units enter the population of authorized units. It is our understanding that VideoCipher units made under license by Channel Master entered the population of authorized units this way. Your letter implies that this is not the case. If that is so, please elaborate on 1) how Channel Master units are authorized, and 2) if you refuse to authorize Titan units in a similar manner. In any event, and regardless of how Channel Master units were authorized, we must insist on reasonable access to the DBS Center for all of the reasons set forth in this letter. Assuming there is compensation from Channel Master, we will, of course, agree to compensate General Instrument for any reasonable expense it may incur in complying with our request.

Mr. Bunker, we appreciate that it is not in the interests of General Instrument to assist Titan in developing a competitive alternative to your system. We expect, however, that General Instrument will act responsibly and in accordance with its legal obligations. We await your prompt response to this letter.

Very truly yours,

David D Otten

David D. Otten
Vice President and General Manager
Information Systems Division